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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,593	11/13/2003	Khurram Muhammad	TI-34776	8991
23494	7590	05/05/2006	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			LE, DINH THANH	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	
			2816	

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/712,593

Applicant(s)

MUHAMMAD ET AL.

Examiner

DINH T. LE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 24-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 24-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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NON-FINAL REJECTION

Claim Objection

Claim 37 is objected to because it depends on canceled claim 21. Correction is required.

Claim Rejections

Claim Rejections - 35 USC § 112

Claims 4-5, 8-15, 17-20 and 24-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Correction or clarification is required.

In claim 4, the description of the present invention is incomplete because the input signal, the output signal, the amplifier stage, the filters, amplifier stage and sampling means are not connected to anything. Thus, the claimed filter may not perform the recited function. The same is true for claim 24.

In claim 8, the description of the present invention is incomplete because the capacitors and the capacitors banks are not connected to anything. Thus, the claimed capacitor and the capacitor banks may not perform the recited function. Also, it is unclear how the capacitors can be "charged" since no means for performing the charging function is recited in this claim and how the recitation "capacitor banks", "rotating capacitors" and "buffer capacitor" is read on the preferred embodiment or seen on the drawings. The same is true for claims 17 and 28.

In claim 10, it is unclear how the loop can "enclose" the filter and the comparator, and how the signal can be "combined" on line 6 since no combining means is recited in this claim. The same is true for claim 30.

In claim 17, it is unclear how the recitation "subset" and "different subset" is read on the preferred embodiment or seen on the drawings. The same is true for claims 18 and 37-38.

The remaining claims are dependent from the above claims and therefore also considered indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 16 is rejected under 35 USC 103(a) as being unpatentable over Simon et al (GB 2230627) in view of Arvidsson et al (US 6,41,541).

Simon et al discloses in Figures 4-6 a second order filter comprising a cascaded a single pole IIR filters ((50, 50', 50'') to form a high order filter for generating an output signal (Yn) from an input signal (Un+3).

With regard to claim 3, means for direct sampling having multi-tap direct sampling mixer is read on the mixers (74).

However, Simon et al does not disclose that the filters comprise solely of switches and capacitors.

Nevertheless, Arvidsson et al suggests in Figure 1 a IIR filter comprising solely switches (K1-K5, S1-S5) and capacitors (C1-C5) for obtaining a variable value switched capacitor with drastically reduced number of capacitors, see lines 35-67, column 1.

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It would have been obvious to a person having skill in the art at the time the invention was made to employ the switches and capacitors as suggested by Arvidsson et al in Simon et al for the purpose of obtaining a variable switched capacitor with drastically reduced number of capacitors.

Claim 16 is further rejected under 35 USC 103 (a) as being unpatentable over Lee et al (US 5,732,002) in view of Arvidsson et al (US 6,41,541).

Lee et al discloses in Figure 1 a filter comprising a cascaded a single pole IIR filters (14, 16, 18, 20) to form a high order filter for generating an output signal (34) from an input signal (32).

However, Lee et al et al does not disclose that the filters comprise solely of switches and capacitors.

Nevertheless, Arvidsson et al suggests in Figure 1 a IIR filter comprising solely switches (K1-K5, S1-S5) and capacitors (C1-C5) for obtaining a variable value switched capacitor with drastically reduced number of capacitors, see lines 35-67, column 1.

It would have been obvious to a person having skill in the art at the time the invention was made to employ the switches and capacitors as suggested by Arvidsson et al in Lee for the purpose of obtaining a variable switched capacitor with drastically reduced number of capacitors.

Allowable Subject Matter

Claims 4-15, 17-20 and 24-40 would be allowable if rewritten to overcome the

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rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The claims are allowed because the prior art of record does not show the filter comprising (i) at least one amplifier stage, the comparator and the negative feedback loop as combined.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DINH T. LE whose telephone number is (571) 272-1745. The examiner can normally be reached on Monday-Friday (8AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIMOTHY CALLAHAN can be reached at (571) 272-1740.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DINH LE
Primary Examiner

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19 October 2005

In claim 10, it is not understood how the negative feedback loop can “enclose” the filters and the comparator, how the input signal can “combined” with the feedback signal since no means for performing the combining function is recited in this claim.

The remaining claims are dependent from the above claims and therefore also considered indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-7, 21-23 and 26 –27 are rejected under 35 USC 102 (b) as being anticipated by Simon et al (GB 2230627).

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Simon et al discloses in Figures 4-6 a second order filter comprising a cascaded a single pole IIR filters ((50, 50', 50'') to form a high order filter for generating an output signal (Y_n) from an input signal (U_{n+3}).

With regard to claim 3, means for direct sampling having multi-tap direct sampling mixer is read on the mixers (74).

Claims 1, 6, 21 and 26 are further rejected under 35 USC 102 (b) as being anticipated by Lee et al (US 5,732,002).

Lee et al discloses in Figure 1 a filter comprising a cascaded a single pole IIR filters (14, 16, 18, 20) to form a high order filter for generating an output signal (34) from an input signal (32).

Response to Applicant's Arguments

The applicant's arguments over the rejection under 35 USC 112, second paragraph, is not persuasive because the claims still include unclear recitation as stated above. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant argues that Simmon et al does not provide a solution to an analog problem of implementing high order passive analog IIR filter and Lee does not show an analog filter implementation. The arguments are not persuasive because it is biased the limitation which is not recited in the rejected claims. There s nothing recited in the rejected claims about the implementing solution or analog filter implementation. The phrase "A discrete time analog filter)

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on line 1 of claim 1 is recited in the preamble so that it is not given any patentable weight. Thus, the limitation "a cascaded single pole IIR filters" remains readable in the Simmon et al reference and Lee reference.

Allowable Subject Matter

Claims 4-5, 8-20, 24-25 and 28-40 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The claims are allowed because the prior art of record does not show the filter comprising (i) at least one amplifier stage as combined in claim 4, (ii) the capacitors as combined in claim 8, (iii) the comparator and a negative feedback loop as combined in claim 10, and (iii) solely of switches and capacitors as combined in claim 16.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DINH T. LE whose telephone number is (571) 272-1745. The examiner can normally be reached on Monday-Friday (8AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIMOTHY CALLAHAN can be reached at (571) 272-1740.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DINH LE
Primary Examiner

19 October 2005